

Ch. 4**Q11:**

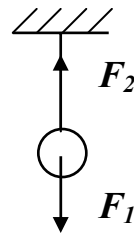
No. If now force will affect on the bullet, it will continue to travel with the same velocity (Newton's first law).

Q18:

The mass will be the same. The weight of that mass on the moon will be 1/6 of weight on the earth ($F_g = W = mg$, m is a mass, g is the acceleration due to gravity).

Q24:

- a) F_1 is due to gravity, F_2 is reaction force
- b) These forces are equal and have an opposite directions

**E9:**

The weight $W = F_g = mg = (40 \text{ kg}) (9.8 \text{ m/s}^2) = 392 \text{ N}$

E10:

The mass $m = W/g = (540 \text{ N}) / (9.8 \text{ m/s}^2) = 55.1 \text{ kg}$

E15:

A 5-kg rock due to the gravitation experiences the force:

$F_g = mg = (5 \text{ kg}) (9.8 \text{ m/s}^2) = 49 \text{ N}$. The total net force acting on a rock is:

$F_{net} = ma = (5 \text{ kg}) (7 \text{ m/s}^2) = 35 \text{ N}$. The force of air resistance is:

$F_{air \text{ res}} = F_g - F_{net} = 49 \text{ N} - 35 \text{ N} = 14 \text{ N}$.

E17:

a) The gravitation force acting on the ball $F_g = mg = (1.5 \text{ kg}) (9.8 \text{ m/s}^2) = 14.7 \text{ N}$

The net force acting on the ball $F_{net} = F_{up} - F_g = 18 \text{ N} - 14.7 \text{ N} = 3.3 \text{ N}$

b) The acceleration of the ball is $a = F_{net}/m = (3.3 \text{ N})/(1.5 \text{ kg}) = 2.2 \text{ m/s}^2$.

CP4:

a) Yes. $F_g = mg = (60 \text{ kg}) (9.8 \text{ m/s}^2) = 588 \text{ N}$

$$F_{net} = F_g - F_{up} = 588 \text{ N} - 500 \text{ N} = 88 \text{ N}$$

b) $a = F_{tot}/m = (88 \text{ N})/(60 \text{ kg}) = 1.467 \text{ m/s}^2$ (down)

